

What is claimed is:

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1. A high fidelity insert earphone comprising: receiver means for generating an acoustic output signal as a function of an input electrical signal, said receiver means including terminals for receiving an input electrical signal and an outlet for propagation of said acoustic signal therefrom, electrical coupling means for coupling said terminals to a source of electrical signals, acoustic coupling means for insertion into an entrance of an ear canal of a user and having a an opening therethrough, housing means including a chamber portion providing a chamber for said receiver means and including a tubular portion supported within said opening of said acoustic coupling means and defining a passage having an inlet end portion in communication with said outlet of said receiver means and an opposite outlet end portion for propagation of said acoustic signal into said earcanal, and acoustic damper means supported within said outlet end portion of said passage of said tubular portion.

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2. A high fidelity insert earphone as defined in claim 1, said acoustic damper means comprising a tubular support member and a screen supported by said support member, said tubular support member being press-fitted into said outlet end portion of said passage, and said passage being formed with an internal shoulder engaged by one end of said tubular support member during installation of said acoustic damper means to limit movement toward said receiver means.

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3. A high fidelity insert earphone as defined in claim 1, wherein said chamber portion of said housing means includes an outer wall in surrounding relation to said receiver means and an end wall from which said tubular portion projects.

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5 4. A high fidelity insert earphone as defined  
10 in claim 3, wherein said receiver means includes an output  
tube projecting from an end surface of said receiver means  
inserted into said inlet end portion of said passage of  
said housing means, and resilient mounting means  
positioned between said end surface of said receiver means  
and an inside surface of said end wall of said chamber  
means and also between an outer surface of said receiver  
means and an inner surface of said outer wall of said  
chamber portion.

5 5. A high fidelity insert earphone as defined  
10 in claim 4, said resilient mounting means being formed  
from a generally rectangular piece of a resilient sheet  
material having a central opening, and said output tube  
5 during installation of said receiver means being extended  
through said central opening and into said inlet end  
portion of said passage while said piece of sheet material  
is folded back around said receiver.

5 6. A high fidelity insert earphone as defined  
in claim 3, wherein an end section of said tubular portion  
of said housing means is of enlarged size to provide a  
external shoulder in facing relation to an outer surface  
5 of said end wall of said chamber portion, and wherein said  
acoustic coupling means includes a resilient material  
which in assembly is stretched over said end section to  
then expand into the space between said external shoulder  
and said end wall.

7. A high fidelity insert earphone as defined  
in claim 1, said housing means including a one-piece  
member of molded plastic defining said chamber portion and  
said tubular portion.

8. A high fidelity insert earphone as defined in claim 7, said one-piece member of said housing means including a wall at one end of said chamber portion from which said tubular portion projects, and said housing means further including an end cap member secured to said one-piece member at an opposite end of said chamber portion.

9. A high fidelity insert earphone as defined in claim 8, wherein said electrical coupling means includes a cable having conductors and a protective shield, means for physically connecting said shield to said end cap member, and means for electrically coupling said conductors and said terminals of said receiver means.

10. A high fidelity insert earphone as defined in claim 1, wherein said electrical coupling means includes a capacitor and a first resistor connected in series relation between said electrical signal source and one of said terminals of said receiver means, and a second resistor connected in parallel with the combination of said capacitor and said first resistor.

11. A high fidelity insert earphone as defined in claim 10, wherein said housing means further includes an end cap member for closing one end of said chamber portion, said capacitor and said first and second resistors being physically installed within said housing means between said end cap member and said receiver means.

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5 12. An earphone subassembly for providing a high fidelity earphone upon installation in an opening in an acoustic coupling means which is insertable into an entrance of an ear canal of a user and which is of any one of a number of different types including custom earmolds and ear tips of foam material, said earphone subassembly comprising: receiver means for generating an acoustic output signal as a function of an input electrical signal, said receiver means including an outlet for propagation of  
10 said acoustic signal therefrom, housing means including a chamber portion providing a chamber for said receiver means and including a tubular portion arranged to be supported within said opening of said acoustic coupling means and defining a passage having an inlet end portion  
15 in communication with said outlet of said receiver means and an opposite outlet end portion for propagation of said acoustic signal into said ear canal, and acoustic damper means supported within said outlet end portion of said passage of said tubular portion.

5 13. An earphone subassembly as defined in claim 12, said acoustic damper means comprising a tubular support member and a screen supported by said support member, said tubular support member being press-fitted into said outlet end portion of said passage, and said passage being formed with an internal shoulder engaged by one end of said tubular support member during installation of said acoustic damper means to limit movement toward said receiver means.

5 14. An earphone subassembly as defined in claim 13, wherein said chamber portion of said housing means includes an outer wall in surrounding relation to said receiver means and an end wall from which said tubular portion projects.

15. ~~An earphone subassembly as defined in claim 14, wherein said tubular portion of said housing means is formed to provide a external shoulder in facing relation to an outer surface of said end wall of said chamber portion and arranged to receive a portion of said acoustic coupling means of reduced cross-sectional size dimensioned to be positioned between said wall portion of said housing and said shoulder of said tubular portion to releasably lock said housing means and said acoustic coupling means together.~~

16. A method of making an earphone, comprising the steps of providing a receiver including input electrical terminals at one end and an acoustic outlet tube projecting from an opposite end, providing an acoustic damper including a tubular support and a screen supported by said tubular support, molding from plastic a housing member which includes a chamber portion for said receiver and a tubular portion defining a passage extending from said chamber, and installing said receiver in said chamber to insert said outlet tube into one end of said passage, and installing said acoustic damper in the opposite end of said passage.

17. ~~A method of making an earphone as defined in claim 16, wherein said step of installing said receiver includes the steps of providing a generally rectangular piece of sheet material having a central opening, extending said outlet tube of said receiver through said opening prior to installing said receiver in said chamber, and folding said sheet material back about said receiver while moving said receiver into said chamber to foldably wrap said sheet material about said receiver and provide a resilient support for said receiver.~~

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18. A method of making a earphone as defined in claim 16, further including the steps of providing a cable which includes a casing and conductors supported by said casing, providing an end cap for said chamber portion of said housing member, connecting said casing of said cable to said end cap, coupling said conductors of said cable to said input electrical terminals of said receiver prior to installation of said receiver, and securing said end cap to said housing member after installation of said receiver in said chamber portion.

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19. A high fidelity insert earphone assembly comprising a pair of insert earphones for insertion in ears of a user, each of said insert earphones having characteristics such as to require increased drive at higher frequencies for optimum high fidelity reproduction, and a cable assembly including a connector unit for connection to sources of electrical signals, a junction unit, a pair of separate cables of substantially equal length connected between said junction unit and said insert earphones, a common cable connected to said between said junction unit and said connector unit, and a pair of electrical coupling means in said junction unit coupled between said common cable and said pair of separate cables and arranged for providing increased response at high frequencies.

20. A high fidelity insert earphone assembly as defined in claim 19, wherein each of said insert earphones includes receiver means for generating an acoustic output signal as a function of an input electrical signal, said receiver means including terminals for receiving an input electrical signal from one of said pair of cables, and an outlet for propagation of said acoustic signal therefrom, electrical coupling means for coupling said terminals to a source of electrical signals, acoustic coupling means for insertion into an entrance of an ear canal of a user and having a an opening therethrough, housing means including a chamber portion providing a chamber for said receiver means and including a tubular portion supported within said opening of said acoustic coupling means and defining a passage having an inlet end portion in communication with said outlet of said receiver means and an opposite outlet end portion for propagation of said acoustic signal into said earcanal, and acoustic damper means supported within said outlet end portion of said passage of said tubular portion, and means for coupling said

21. A high fidelity insert earphone assembly as defined in claim 19, wherein said electrical coupling means includes a capacitor and a first resistor connected in series relation between said electrical signal source and one of said terminals of said receiver means, and a second resistor connected in parallel with the combination of said capacitor and said first resistor.

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